

The Science of Exercise

This year the Pulse Generator is focusing on the scientific evidence as a basis for exercise and health. Throughout the next few months we will be producing a number of articles, events & tools that you can use to improve your health and well being. Stay tuned for many great topics and activities.



HYDRATION

where do you fit within the guidelines?

DID YOU KNOW



that different people require different amounts of water each day to stay properly hydrated?

How does water benefit our physiology?

Our body uses **water** in all its cells, organs and tissues to help regulate its temperature and maintain other bodily functions.



Heart - Blood Volume

Your heart is constantly working, pumping about

2,000 gallons of blood a day. By staying hydrated – i.e. drinking more water than you are losing – you are helping your heart do its job. Proper hydration increases blood volume, which in turn, decreases the strain on your heart as it can pump blood more easily. The circulation of blood is important to carry necessary oxygen, nutrition and remove waste from every cell. When dehydration occurs our blood volume decreases retaining more sodium. The heart beats faster to circulate blood through the body.

Symptoms: Decreased energy, weakness, dizziness, heart palpitations.

Health Benefit: Your heart does not have to work so hard. Lower HR

Benefit to Athletic Performance: Increased endurance.

This Issue Hydration-

How much water do you really need?



Digestion - Water and other liquids keep the food you eat moving through your intestines. These organs

break down food so that your body can absorb the nutrients. Hydration is important to keep them smooth & flexible. One of the most accurate signs of good hydration is both color and volume of your urine. If you are concerned that you are not drinking enough water, check your urine. If your urine is usually colorless or light yellow, you are well hydrated. If your urine is a dark yellow or amber color, you may be dehydrated.

Symptoms: Upset stomach, muscle cramping, constipation, bad breath, sweet cravings, dark urine.

Health Benefit: Healthier skin complexion, regular bowel movements.

Benefit to Athletic Performance: Absorption of nutrition provides building blocks for good recovery, muscular development & healthy bones.



Joint Mobility

Water helps keep joints lubricated. A component of synovial fluid, water helps to prevent joint friction. Synovial fluid lubricates and cushions the joints and cartilage surrounding them, keeping bones from rubbing together.

Water helps **build muscle** to further protect the joints. Muscle tissue consists of about 75 percent water, which helps to form protein in muscles, stabilizing and protecting joints. Dehydration can reduce muscle tone by preventing muscles from contracting.

Symptoms: Stiffness, achy joints
Health Benefit: movement with ease and without pain.
Benefit to Athletic Performance: Fluid movement.



Body Temperature Regulation

Water has the capacity to regulate the internal

temperature of the body in response to the external temperature. Sweat is the main means by which water prevents the human body from overheating when the temperature outside it is very high. The evaporation of sweat brings a loss of calories, in the form of heat. This release of energy enables our internal temperature to remain constant. Without this mechanism it would rise in conditions of hot weather or fever.

To maintain stable body temperature, we have to both **sweat and allow the sweat to evaporate!** During exercise in the heat, sweat output often exceeds water intake which results in a body water deficit and electrolyte losses.

Symptoms: Increased muscle fatigue, disorientation & dizziness.
Health Benefit: safety, movement stabilization, lower stress.
Benefit to Athletic Performance: Improved focus, increased

Water's the best choice

Fruit and vegetable juices, milk and herbal teas add to the amount of water you get each day. Even caffeinated drinks (ie: coffee, tea and soda) can contribute to your daily water intake. A moderate amount of caffeine (200 to 300 mgs) is not harmful for most people. 2 to 4, 8-ounce cups of coffee. It's best to limit caffeinated drinks.



Nervous System

When you are well hydrated, your body allows your brain to

function optimally. Staying hydrated helps your nervous system easily communicate with your body.

Symptoms: Increased sensation of effort.
Health Benefit: Improves cognition, reducing confusion, increases alertness, improves memory, focus and attention.
Benefit to Athletic Performance: Improved hand eye coordination.

HOW DO OUR BODIES LOSE WATER?



Respiration (breathing)



Perspiration (sweating)



Digestive Function – waste elimination & urine

We need to replenish what is lost.

Water is best for staying hydrated. Other drinks and foods contain water and can help you stay hydrated. Some, however, may add extra calories from sugar to your diet.

6 Unusual Signs of Dehydration

1. Bad Breath

Saliva has antibacterial properties, but dehydration can prevent your body from making enough saliva.

2. Dry or Flushed Skin

You may think that people who are dehydrated are really sweaty, but in fact, as you go through various stages of dehydration, you can have very dry skin which may appear flushed as well.

3. Muscle Cramps

As your muscles are working hard, they can seize up. Changes in the electrolytes, such as sodium and potassium, can lead to muscle cramping.

4. Fever and Chills

A high fever can increase dehydration. Unless your body temperature decreases, your skin will lose its cool clamminess and then become hot, flushed and dry to the touch.

5. Food Cravings (Especially for Sweets)

When you're dehydrated, it can be difficult for organs such as the liver, which uses water, to release glycogen [stored glucose] and other components of your energy stores, this can initiate cravings for food. Although you may crave anything from chocolate to a salty snack, cravings for sweets are more common. This occurs when your body is having difficulty breaking down glycogen to release glucose into the bloodstream to use as fuel.

6. Headaches

Although various factors besides dehydration can cause headaches, drinking a full glass of water and sipping more fluids during the day is an easy way to ease your pain if, in fact, dehydration is a culprit.

WHAT TO CONSIDER

A PLACE TO BEGIN

A common recommendation is to drink six or eight 250 mL (8 fl oz) glasses of water or other fluid every day.

In reality, the amount of fluid a person needs depends on several unique factors.



Size. A larger person needs more fluid to maintain hydration than a smaller person.



Activity Level. An individual who works out or is very active requires more fluid than someone who sits at a desk all day.



Environment. A hot and humid environment causes people to sweat. Sweating removes fluid and electrolytes from the body, which often need to be replaced to prevent dehydration.



Diet. A person who eats oranges, salads, soups, watermelon or other “water-filled” foods may get as much as 20 percent of his or her daily fluid through food.

STAY Hydrated

Create a Long Term Change

Try a 2 week water challenge to monitor the effects that increased water consumption has on your health & maybe even your attitude. Use a consistent water bottle for this challenge that you can measure the volume. Put a piece of masking tape on the bottle to record each time you fill it. Record daily, the volume you drink, how often you go to the bathroom, note physical/mental changes. You may notice your skin complexion improves, perhaps the dark circles under your eyes are lighter, memory may improve.

If you can commit to two weeks, you will have a really good idea about how much water you need to enjoy each day.

Simple but beneficial changes to your health.

Sweat and Dehydration

How you sweat plays an important role in staying hydrated. Try this easy calculation:

- Weigh yourself before and after a moderate workout, wearing the same clothing.
- In ounces, determine the difference between pre- and post-workout weight. 1 pound = 16 ounces.
- Add this number to how much fluid you drank during your workout.
- Divide this by the length of your workout (number of hours).
- The resulting number is your hourly sweat rate.

Now you know how much you need to drink every hour to replace your lost sweat!

Simple ways to monitor



Assess Skin Turgor:

When pinched, the skin of a dehydrated person may remain “tented” and take some time to return to its normal, flat appearance. Test the skin below the clavicle or on the abdomen, sternum, or forearm. This is not an method to assess older adults as we lose skin elasticity as we age.

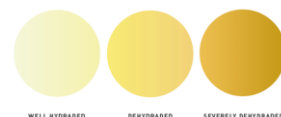


Assess capillary refill:

by applying pressure to a fingernail for 5 seconds. Release the pressure and observe the time (usually 1 to 3 seconds) it takes for the color to return to normal. If it takes longer, you may be dehydrated.

Monitor Urine:

Light yellow, you are well hydrated. If your urine is a dark yellow or amber color, you may be dehydrated.



WELL HYDRATED DEHYDRATED SEVERELY DEHYDRATED



BECOME A MEMBER

The Pulse Generator is a not-for-profit organization that provides all AHS employees in the Edmonton and Calgary zones with an opportunity to develop and maintain a healthy lifestyle. Our 24hr onsite fitness and recreation facilities, programs and services are offered to our members at a reasonable cost.

OUR GOAL

To operate and deliver affordable fitness and health opportunities to our Health Care Community:

Employees and the Corporation - Alberta Health Services.

To help employees and the corporation understand why health and fitness opportunities are and should be a priority in the

WHAT WE OFFER

- Access to all Pulse Generator facilities 24/7 - 365 days per year. (get in touch with us to set this up if you would like to use other facilities in Edmonton or Calgary)
- Our fitness centers include free weight, cable, suspension, functional & cardio equipment.
- Qualified staff provide assistance during staff hours (varies)
- Personal training services.
- Options for small group training, group fitness classes.
- Special member pricing & access to all Pulse Generator program opportunities.



Don't let the grass grow under your feet.

Sign up today!

www.pulsegenerator.ca

\$14.25 /month

Monthly fee based on a one year membership.
Payroll deductions are offered for permanent full or part time AHS employees.

MEMBERSHIPS prepaid

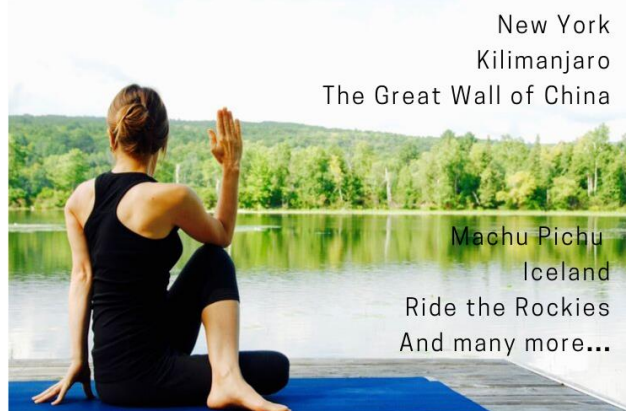


MEMBERSHIP OPTIONS	PRICE
One Month	\$27.50
Three Month	\$66.00
Six Month	\$93.50
Eight Month	\$121.00
One Year	\$170.50

The Pulse Generator continues to take groups for fitness and health adventures around the world.

DESTINATION FITNESS

Be sure to stay tuned for more wellness travel opportunities through the Pulse Generator! Some of the trips to date:



New York
Kilimanjaro
The Great Wall of China

Machu Pichu
Iceland
Ride the Rockies
And many more...



• WANTED •

YOUR CO-WORKERS TO JOIN THE PULSE GENERATOR!



ROUND UP YOUR COWORKERS AND GIVE THEM A FREE BUDDY PASS!

Get your buddy pass today! Ask us for more information!

You say.

We listen.

We act.

FITNESS CLASSES

COMING SOON!



YOGA



**CIRCUIT
TRAINING**



**STRENGTH
TRAINING**



MEDITATION



MOBILITY





OCTOBER EMS PERSONAL TRAINING DEAL

PROGRAM DESIGN AND 2
PERSONAL TRAINING
SESSIONS FOR \$150 AT
CALGARY AND
EDMONTON EMS
LOCATIONS

PURCHASE A PERSONALIZED
PROGRAM AS WELL AS 2 - 60
MINUTE PERSONAL TRAINING
SESSIONS



How to Use the TRX

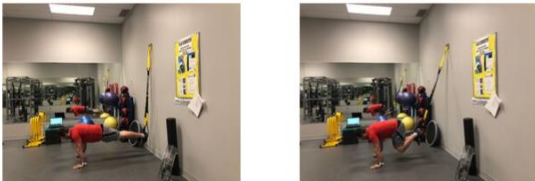
What's that hanging thing in the gym?



It is the TRX

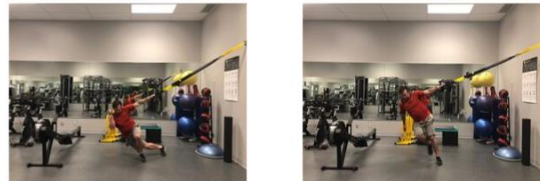
A versatile piece of equipment for training. Allowing you to train in multiple directions and with many different purposes. You can work on balance, strength, agility cardio and flexibility. You can do entire workouts with it or use it within a training plan. Make sure to secure it to something stable like a goal post, squat rack or a wall mount.

Cardio



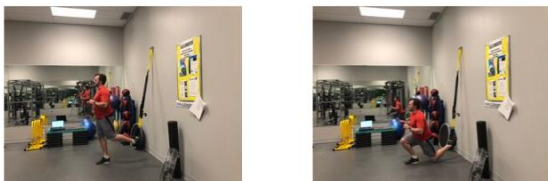
Use the TRX for circuits exercise like knee tucks and mountain climbers. These are full body exercises that will elevate the heart rate quickly

Agility



The Crossover step is important to most sports. Learning to lean into the step will help you get faster. The TRX is an excellent tool to help teach you proper agility positions

Strength



Adding instability to exercises that you may already be doing can make exercises more difficult and add strength. Adding weights are another option to add strength and challenge.

Flexibility



The overhead side bend is a great example of a flexibility exercise for the TRX . It stretches the lat and shoulder.